

POLYMERIZATION OF AROMATIC MONOMERS USING DERIVATIVES OF  
HEMATIN

ABSTRACT OF THE INVENTION

Hematin, a hydroxyferriprotoporphyrin, is derivatized with one or more non-  
5 proteinaceous amphipathic groups. The derivatized hematin can serve as a mimic of  
horseradish peroxidase in polymerizing aromatic monomers, such as aromatic  
compounds. These derivatized hematins can also be used as catalysts in polymerizing  
aromatic monomers, and can exhibit significantly greater catalytic activity than  
underivatized hematin in acidic solutions. In one embodiment, polymerization is in the  
10 presence of a template, along which aromatic monomers align. An assembled hematin  
includes alternating layers of hematin and a polyelectrolyte, which are deposited on an  
electrically charged substrate. Assembled hematin can also be used to polymerize  
aromatic monomers.